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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,942	03/01/2002	Cem Basceri	MI22-1951	3748

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EXAMINER

HUYNH, YENNHU B

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 07/08/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,942

Applicant(s)

BASCERI, CEM

Examiner

Yennhu B Huynh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-47, 49-51, 53, 54 and 58-65 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 43-47, 49-51, 53, 54 and 58-65 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.

- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)

- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____

- 5) ☐ Notice of Informal Patent Application (PTO-152)

- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Amendment filed on 5/20/03.

Claims 48,52 & 55-57 are cancelled by Amendment filled on 2/3/03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 43, 45, 46, 50,51, 53, 54 & 60-63 are rejected under 35 U.S.C. 102(e) as being anticipated by Suh (U.S. 6,338,970).

Suh disclose a ferroelectrics capacitor of semiconductor device, which include:

-Re. Claims 43, 53,54 & 61-63: first capacitor electrode 21; a perovskite type dielectric material comprising a first layer 22 proximate the first electrode; a second layer 23 again the first layer and further from the first electrode than the first layer, the second layer having a different amount of crystalline than the first layer, perovskite type dielectric material comprising barium, strontium, titanium and oxygen has the same chemical composition through out both the first and second layer(Abstract, col. 2, lines 8-31 and col.2 & 3 lines 52-18); a second capacitor electrode 24 over the perovskite type dielectric material (col.3, lines 19-23).

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-Re. claims 45 & 46: wherein the first layer has less crystalline and amorphous than the second layer is substantially crystalline nuclei (col.2 & 3, lines 64-67 and lines 14-18).

-Re. claim 50: wherein the perovskite type material has a different chemical composition with spin coating and precursor in the second layer than the first layer (col.4, lines 3-14).

-Re. claim 51: wherein the perovskite type material has material has the same chemical composition of $(\text{Sr,Bi})\text{Ta}_2\text{O}_9$ in the first and second layer.

-Re. claim 60: wherein the first and second capacitor electrode comprising platinum (col.3, lines 33-37).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 44 & 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suh (U.S. 6,338,970) further in view of Ren et al. (U.S. 6,507,060B2).

Suh discloses substantially all of the claimed invention. However,

Suh does not disclose a range of the dielectric layers thick from 10 –50 and 50-500 Angstroms (cl.44).

-Re. claim 44: Ren et al. disclose the first and third layer thickness is from .01 - .10 mum and the second layer thickness is from .15 – 2 mum (col.3, lines 19-60).

The thickness of the dielectric layers are considered to involve routine optimization while has been held to be within the level of ordinary skill in the art, As noted In re Aller 105 USPQ233, 255 (CCPA 1955), the selection of reaction parameters such as temperature and concentration would have been obvious.

"Normally, it is to expected that a change in temperature, or in range, concentration, cycles, thickness, would be an unpatentable modification. Under some circumstance, however, changes such as these may be impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality ... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller 105 USPQ233, 255 (CCPA 1955). See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmischer 66 USPQ 314 (CCPA 1945); In re Norman 66 USPQ 308 USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Dreyfus 24 USPQ 52 (CCPA 1934).

Sub also does not disclose forming a third dielectric layer approximate second electrode has the same crystalline amount/amorphous to the first dielectric layer (cl.47)

-Re. claim 47: Ren et al. disclose a capacitor perovskite type dielectric material with 3 layers 108,110 & 112 , wherein the third layer 112 has a same crystalline amount as the first layer 108 (col.4, lines 7-31)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Such invention by incorporating a third dielectric layer is in amorphous to obtain a well crystallized state at annealing.

Claims 64 & 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suh (U.S. 6,338,970) further in view of Summerfelt et al. (U.S. 6,362,068B1).

Suh discloses substantially all of the claimed invention. However, Suh also does not disclose the perovskite type dielectric material comprising lead zirconium titanate or lanthanum doped PZT (cls. 64 & 65).

-Re. claims 64 & 65: Summerfelt also disclose a perovskite type material comprises PZT , lanthanum doped PZT through out the layers (col.1, lines 44-61);

It would have been obvious to one having skill in the art at the time the invention was made to modify Suh invention by incorporating the alternative using of perovskite type dielectric material comprises PZT , lanthanum doped PZT to control leakage current because they are high permittivity material.

Response to Arguments

Applicant's arguments with respect to claims 43-47, 49-51, 53, 54 & 58-65 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yennhu B. Huynh whose telephone number is 703-308-6110. The examiner can normally be reached on M-F 8.30AM-7.00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached 703-308-4940. The fax phone numbers for


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the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

YNBH,

6/19/03


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800